

### **REMARKS**

The Office Action dated October 5, 2006, has been fully considered. The present Amendment is intended to be a complete response thereto and to place the case in condition for allowance.

Claims 1-14 are pending. Claims 8-14 have been withdrawn. Support for the new claims are found in the original claims. Support for the amendment to claim 1 is found, *inter alia*, in original claim 3. Support for the amendment to claim 5 is found, *inter alia*, in the specification on page 6, lines 22-25. The remaining amendments to the claims are minor clarifications and are not intended to change the scope of the claims.

### **THE CLAIMS ARE NOT ANTICIPATED**

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Palmer et al. (U.S. Patent No. 6,252,113). Applicant respectfully traverses the rejection.

To anticipate a claim, the reference must teach every element of the claim. *See* MPEP § 2131. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Palmer et al. do not anticipate the present invention because they fail to disclose every element of the claimed invention. In particular, Palmer et al. fail to disclose the reaction of 4-(2-methoxyethyl)phenol and epichlorohydrin (step B) at a temperature of  $42.5 \pm 2.5^{\circ}\text{C}$  (i.e., between  $40$  and  $45^{\circ}\text{C}$ ). On the contrary, Palmer et al. teach the reaction at  $50$ - $70^{\circ}\text{C}$  (column 2, lines 42-43; and column 3, Working Example), which is substantially higher than the temperature of the presently claimed invention. Therefore, Palmer et al. do not anticipate the present invention.

#### THE CLAIMS ARE NOT OBVIOUS

Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being obvious over Ribalta Baro et al. (U.S. Patent No. 5,082,969) and Palmer et al. Applicant respectfully traverses the rejection.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* MPEP 2143.

First, Ribalta Baro et al. and Palmer et al., taken alone or in combination fail to disclose every element of the claimed invention. In particular, the references fail to disclose 1) the reaction of 4-(2-methoxyethyl)phenol and epichlorohydrin (step B) at a temperature of  $40$ - $45^{\circ}\text{C}$ ; and 2) extracting and washing the organic phase reaction product of step B at a pH of  $7.0$ - $8.0$ .

With regard to the reaction temperature, Ribalta Baro et al. teach a reaction temperature of  $20$ - $25^{\circ}\text{C}$  (Example 1), while Palmer et al. disclose reaction temperature at  $50$ - $70^{\circ}\text{C}$  (column 2,

lines 42-43; and column 3, Working Example). Therefore, neither references teaches a reaction temperature of 40-45°C.

With regard to the extracting and washing at a pH of 7.0-8.0, the Examiner alleges that both cited references disclose washing by water which inherently has a pH of about 7. Applicant respectfully submits that the pH recited in the claim refers to the pH of the organic mass (the organic mass refers to the organic phase mixed with the washing water) or the pH of the resulting water coming out after washing, which is critical for attaining purity. Please note that Applicant has amend the claims to recite “extracting and washing the organic phase reaction product of step B at a pH of 7.0-8.0 with water” to emphasize that the organic mass is at the pH of 7.0-8.0, not just the water. The pH of the water during and after washing will be obviously different from the initial pH of 7.0, because it contains dissolved materials such as unused base or reactants, and water soluble impurities/by-products present in the reaction mass. The higher degree of purity (even better than Palmer et al.’s) is achieved in the present invention by repeated washings of the unused base or other impurities present in the reaction mass, which is not taught in the cited references as the same pH of the organic mass (not of the pure water) was not achieved or disclosed. This fact is clearly evident from the inevitable distillation of the product (epoxy-intermediate) in Palmer et al., because if the same degree of purity was achieved in Palmer et al. just by water washing, the distillation of the product would not be required.

Second, the recited temperature and pH range are not obvious from the teachings of Ribalta Baro et al. and Palmer et al. because applicant has unexpectedly discovered a critical range of reaction temperatures and washing pH (not just the water pH) that leads to higher yield and purity when compared to the prior art. Referring to the Mehra Declaration filed March 22, 2006, the operating temperature of the reaction (40-45°C) provides a near complete conversion

of the phenol compound into essentially the epoxide intermediate. On the contrary, the Ribalta Baro et al. process being operated at a lower temperature (25°C), yields two products, 3-[4-(2-methoxyethyl)phenoxy]-1,2-epoxypropane intermediate and the corresponding chlorohydrin intermediate (column 2, lines 55-57), having different reactivity patterns in the next step at different conditions. Likewise, Palmer et al. requires distillation to reach 98% purity (column 3, lines 20-23).

Further, the cited references teach away from the reaction temperature of the present invention. As discussed above, Ribalta Baro et al. disclose a reaction temperature of 20-25°C (Example 1), while Palmer et al. disclose reaction temperature at 50-70°C (column 2, lines 42-43; and column 3, Working Example). Neither of these ranges encompasses the present temperature range of 40-45°C. Ribalta Baro et al. disclose a low temperature range while Palmer et al. disclose a high temperature range. This is clearly contrary to the present invention, as Applicant has discovered an intermediate range that, when combined with the appropriate washing pH, achieves better yield and purity of the epoxy intermediate. One of ordinary skill in the art reading the cited references would not have been motivated to modify the reaction temperatures that are taught by Ribalta Baro et al. and Palmer et al.

The goal of the present invention is to provide highly pure epoxy-intermediate without requiring energy intensive distillation. This is achieved by performing the reaction at 40-45°C and washing the product at a specific pH with water. The advantages resulting from combining these two variables (as recounted in the Mehra Declaration) are unexpected and would not have been obvious to a person of ordinary skilled in the art.

## CONCLUSION

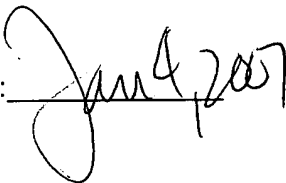
Applicant has responded to the Office Action mailed October 5, 2006. All pending claims are now believed to be allowable and favorable action is respectfully requested.

In the event that there are any questions relating to this Amendment or to the application in general, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that the prosecution of this application may be expedited.

Please charge any shortage or credit any overpayment of fees to BLANK ROME LLP, Deposit Account No. 23-2185 (124907-00111). In the event that a petition for an extension of time is required to be submitted herewith and in the event that a separate petition does not accompany this response, Applicant hereby petitions under 37 C.F.R. 1.136(a) for an extension of time.

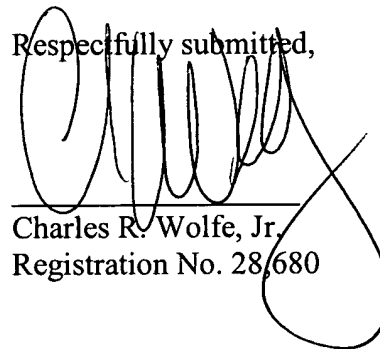
Any fees due are authorized above.

Date: \_\_\_\_\_



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Respectfully submitted,

  
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